



Rancher Adoption Potential of the Birdsfoot Trefoil Pasture Beef Production System in the Intermountain West

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Introduction

Beef cattle raised in the western United States spend the majority of their life on rangeland or pasture, eating grasses and forbs, followed by three to four months in a feedlot eating a combination of grain and hay to reach target weight (Norwak 1991). Although, grass- or pasture-fed beef has become popular with consumers in the last decade and receives premium pricing (Cowee and Curtis, 2012), pasture finishing systems were not a comparable option to grain finishing systems due to differences in cattle weight gain. Daily weight gain for grain finishing systems average 4 lbs. per day, while grass pasture weight gain averages 1.5 to 2 lbs. per day (Norwak and Korsching 1983).

Birdsfoot trefoil (BFT), which is a perennial forage legume like alfalfa, thrives under irrigation in the high-elevation West. The low concentration of condensed tannins in BFT prevents bloat, allowing BFT to be grazed in pure stands as well as in mixtures with grasses. The tannins in BFT turn excess plant protein into high-quality bypass protein, enhancing forage utilization and ruminant growth. BFT can utilize the nitrogen in ruminant waste returned to pasture soil or fix its own nitrogen as needed. The tannins in BFT reduce ruminant methane production (Pinares-Patino et al., 2003;

Waghorn et al., 2002) and reduce nitrogen losses from cattle waste (Misselbrook et al., 2005; Woodward et al., 2009; Crush and Keogh, 1998), lowering the greenhouse gas emissions associated with beef production. Like alfalfa, BFT has a deep taproot and continues to produce forage during mid-summer under irrigation when grass growth slows. The dense growth of rotationally stocked BFT pastures can support 1500 pounds of beef per acre from the beginning of June through the end of August, adding 2.5-3.5 pounds of gain per cow per day (MacAdam et al., 2011), which approaches the rate of bodyweight gain on cereal grains. Cattle grazing on BFT can be sold as grass-fed or pasture-finished beef, reaping a premium from consumers concerned about conventional beef production systems.



Yellow inflorescence of birdsfoot trefoil

This fact sheet provides an overview of current practices on BFT for pasture and potential adoption of BFT for cattle production in the Intermountain West (IMW).

A qualitative study was conducted utilizing rancher focus groups in the IMW region, including locations in Logan, Brigham City, Vernal, Ibapah, Cedar City, and Fort Duchesne, Utah. The focus groups consisted primarily of farmers and ranchers with access to irrigation.

Focus Group Participants

The focus group participants were active beef cattle and/or dairy producers. In the Logan area, small-scale cattle producers (10 - 100 cows, 80 - 150 acres) owned their grazing property and used a pasture rotation system in summer and fed their cattle hay and corn in the winter. These cattle producers did not sell packaged beef cuts directly to consumers, although some had participated in farmers' markets. The key barriers to adopting BFT pastures were the availability of a state or federally licensed meat processing facility, the need to replant pastures to a different plant species, and the need to intensify their level of cattle management.

Similarly, ranchers in the Vernal area use pasture rotation systems for summer feeding and produce hay and silage for winter feeding. Vernal ranchers generally owned larger farms (100 – 300 cows and up to 3500 acres). Northern Utah tribal ranchers grazed their cattle on tribal lands, where allotted land, assigned land, and grazing rights were held by the tribal participants.

The majority of the focus group ranchers were raised on ranches or farms. They perceived ranching and farming as their lifestyle and felt it was important to maintain their heritage for their children. Like small-acreage cattle producers, ranchers were concerned that rotationally stocking BFT pastures would require increased labor. Ranching/farming was described as time-consuming and already requiring substantial effort to ensure profitability.

The focus group participants also discussed ranch management and land conservation programs in

which they actively participated. The Natural Resources Conservation Service (NRCS) assisted ranchers with fencing, irrigation equipment, and land leveling through cost-share programs. Cooperative Extension programs also provided needed information. Ranchers were heavily involved with local 4-H groups as a means to encourage interest in farming for future generations.

Financial issues and marketing were found to be the major factors influencing rancher management decisions. The potential for BFT utilization to be profitable and the ability of the forage to persist well under increasing climate variability generated interest among the participants.



Research BFT pastures at Utah State University

Rancher Attitudes and Perceptions Toward BFT

The focus group participants were very interested in learning more about the cultivation of BFT and its integration into established ranching operations. Many participants discussed dedicating a small portion of their lands for trial BFT production. More cautious ranchers questioned the impact of BFT on other plants, utilization by horses, and on the potential to attract unwanted wild animals such as deer and elk. There were also questions about the carrying capacity of BFT, as well as crop-specific concerns, such as irrigation requirements, the management of BFT under rotational stocking, and the amount of time required for establishment.

Ranchers expressed concern about future water availability, which had fluctuated in the past few years. The availability of ground water and the cost of water were major barriers to the establishment of new irrigated pastures. Soil quality and fertilization

requirements and weed management were also concerns. The availability of meat processing facilities in the area would be a limitation if pasture-raised cattle production were to increase. Several participating ranchers sold beef on the internet or directly to customers in Salt Lake City, and suggested a market analysis to assess the perceptions of BFT-fed cattle by meat product wholesalers and beef consumers.

Ranchers would be strongly motivated by experienced individuals who had successfully adopted BFT. Ranchers expressed an interest in observing those with BFT pastures and requested additional information on costs and profitability potential. There were also concerns about the time investment required to understand BFT production.



Ruminants may graze BFT in pure stands

In order to understand opportunities for adoption among cattle producers interested in BFT, the focus group participants were asked which support/facilities would be most helpful to them. They expressed interest in financing, facilities, and education (i.e., workshops, demonstrations, publications). Rancher participants were willing to accept compensation for conducting trial programs, although they expressed concern about the risks associated with change. Ranchers were comfortable with their performance in grass-fed techniques and felt able to supply current market demands.

BFT is a new and innovative strategy with somewhat unknown risks and rewards. Therefore, it was not surprising that ranchers were seeking more information on BFT. The NRCS, Utah State University Extension, the Utah Cattlemen's

Association and local cattlemen with experience in BFT production were mentioned as credible sources of support for ranchers looking to establish BFT pastures. The NRCS is currently funding research at Utah State University to carry out a BFT demonstration project for beef production in northern, with the ultimate goal of providing additional information to ranchers, and addressing rancher questions and concerns.

Conclusions

When examining the potential for BFT adoption, understanding the concerns and barriers for local ranchers is important. The qualitative focus groups in this study demonstrated the barriers to BFT pasture adoption in the Intermountain West, which included fear of change, lack of information about BFT establishment and management, irrigation, soil quality, labor requirements, and other potential impacts of BFT production on the ranching environment, including wild animals. Since BFT is similar to alfalfa in many ways, and considerable research has been carried out in Utah to optimize BFT establishment and management, many of these barriers to adoption can be addressed.

Economic circumstances strongly influence management decisions. Ranchers face increasingly uncertain economic conditions, such as the increasing costs of feed, equipment, land, and labor. Farmers are concerned about their ability to pay their debts, but realize that they must maintain flexibility and explore different management options for long-term success. Federal programs and Extension support programs are vital during the adoption process. Rancher adoption of BFT pastures will depend on potential ranch profitability and be influenced by continuing consumer demand for grass-fed and pasture-finished meats, as well as expansion of local meat processing facilities. Extension programming related to BFT adoption should focus on providing financial information such as cost and returns studies for both BFT production and cow-calf production on BFT pastures. Other relevant information should include the health benefits and taste panel responses to BFT-finished beef, as well as potential market and promotion information aimed at consumers already

interested in grass-fed and pasture-finished beef products.

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